DETAILED ACTION

Response to Amendment

1. The amendment filed October 6, 2009 has been entered. Claims 1, 7, and 8 are pending. Claims 2-6 and 9-13 are cancelled.

2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action issued on June 12, 2008.

Claim Rejections - 35 USC § 103

3. The claim rejections under 35 U.S.C. 103(a) as being unpatentable over Ren et al. (US 2004/0209136) in view of Kinkelaar et al. (US 2004/0001991) on claims 1 and 7 are maintained. The rejection is repeated below for convenience.

As to claim 1, Ren et al. discloses a solid electrolyte fuel cell (having a solid membrane electrolyte) (paragraph 24) comprising:

- layers of a fuel cell (Applicant's laminate) compressed to adhesion by bolts (122) (figures 1-4 and 8; paragraph 45, lines 17-22) of
- a methanol delivery film (209, 460, 860) (Applicant's limited fuel-permeating part) (figures 2-4 and 8; paragraph 48, lines 24-27; paragraph 31),
- an anode current collector (224, 424, 823) (figures 2-4 and 8; paragraphs 49, 67, and 79),
- a catalyzed membrane electrolyte (204, 404, 804) with an electrocatalyst coating on an anode face (206) (Applicant's anode catalyst layer), a membrane

electrolyte (Applicant's solid electrolyte membrane), and an electrocatalyst coating on a cathode face (208) (Applicant's cathode catalyst layer) (figures 2-4 and 8; paragraph 48),

- a cathode current collector (226, 426, 836) (figures 2-4 and 8; paragraphs 49, 67, and 79),
- and a cathode filter (290, 480, 880) (Applicant's evaporation inhibiting layer) which limits cathode water evaporation rate (paragraphs 59 and 85)
- in sequence (figures 2-4 and 8),
- wherein the cathode filter (290, 480, 880) (Applicant's evaporation inhibiting layer) which covers the surface of the cathode current collector (226, 426, 836) (figures 2-4 and 8; paragraphs 85-86).

Ren et al. discloses the cathode filter (Applicant's evaporation inhibiting layer) as an extra cathode backing layer which limits cathode water evaporation rate and curbs evaporative water loss (paragraphs 58, 82, and 85), but is silent as to the cathode filter (Applicant's evaporation inhibiting layer) being made of woven or unwoven fabric containing fibrous cellulose.

Kinkelaar et al. teaches cathode backing layers/capillarity (32) structure made of woven or nonwoven fibers of cellulose (paragraph 16) that retains liquids, maintain effective gas diffusion, without adversely impacting fuel cell performance or adding significant expense (paragraphs 11-12 and 14), these cathode backing layers/capillarity (32) are laminated outside of a foil current collector (36), and the current collector (36) is laminated to the cathode (18) of the PEM (12) (figure 1; paragraphs 107 and 111). It

would have been obvious to one of ordinary skill in the art at the time the invention was made to use Kinkelaar et al.'s cathode back layers/capillarity structure made of woven or nonwoven fibers of cellulose as Ren et al.'s cathode filter (Applicant's evaporation inhibiting layer), because Kinkelaar et al. teaches that it retains liquids, maintain effective gas diffusion, without adversely impacting fuel cell performance or adding significant expense (paragraphs 11-12 and 14) and because Ren et al. discloses the desire for the cathode filter to curb evaporative water loss (paragraphs 58, 82, and 85), thus retaining water.

Ren et al. modified by Kinkelaar et al. does not specifically disclose the cathode filter (Applicant's evaporation inhibiting layer) having a volume expansion coefficient of 4.5 or less an initiating water migration from the evaporation inhibiting layer to the cathode at a temperature of 80C or lower. However, it is the position of the examiner that such properties are inherent, given that both Ren et al. modified by Kinkelaar et al. and the present application utilize the same material of woven or nonwoven fibers of cellulose (instant application page 12, lines 20-26; examples 1 and 2). A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature *is necessarily present in that which is described in the reference*. In re Robertson, 49 USPQ2d 1949 (1999).

Regarding claim 7, Ren et al. discloses a fuel reservoir (450, 850) (Applicant's container) reserving a neat methanol (Applicant's liquid fuel) supplied to an anode side is placed adjacently to the methanol delivery film (209, 460, 860) (Applicant's limited

fuel-permeating part) (figures 2-4 and 8; paragraph 48, lines 22-27; paragraph 68, lines 1-4).

4. The claim rejection under 35 U.S.C. 103(a) as being unpatentable over Ren et al. (US 2004/0209136) in view of Kinkelaar et al. (US 2004/0001991) and further in view of Wilson (US 6,808,838) on claim 8 is maintained. The rejection is repeated below for convenience.

Ren et al. discloses the fuel reservoir (450, 850) (Applicant's container) reserving a neat methanol (Applicant's liquid fuel) supplied to an anode side is placed adjacently to the methanol delivery film (209, 460, 860) (Applicant's limited fuel-permeating part) (figures 2-4 and 8; paragraph 48, lines 22-27; paragraph 68, lines 1-4). Carbon dioxide (Applicant's a gas generated by a cell reaction) being vented between the anode diffusion layer (210) and the methanol delivery film (209, 460, 860) (Applicant's limited fuel-permeating part) by figure 2's arrow (234) (Applicant's gas discharging part which is not adjacent to the fuel-absorbing member for discharging), the carbon dioxide (Applicant's a gas generated by a cell reaction) travels next to the methanol delivery film (209, 460, 860) (Applicant's limited fuel-permeating part). The methanol delivery film (209, 460, 860) (Applicant's limited fuel-permeating part) resists carbon dioxide from flowing back into the fuel chamber, so some of the carbon dioxide flows into (Applicant's in the limited fuel-permeating part) the methanol delivery film (209, 460, 860) (Applicant's limited fuel-permeating part), but is kept from going into the fuel chamber, therefore directing the carbon dioxide back out according to figure 2's arrow (234)

(figures 2-4 and 8; paragraph 49, lines 15-18; paragraph 66). A fuel reservoir (450, 850) placed adjacently to the methanol delivery film (209, 460, 860) (Applicant's limited fuel-permeating part) (figures 2-4 and 8; paragraph 48, lines 22-27; paragraph 68, lines 1-4). Ren et al. desires to have the liquid methanol in the fuel reservoir (450, 850) to undergo a phase change to methanol vapor prior to introduction to anode (figures 2-4 and 8; paragraph 68).

Ren et al. is silent as to a fuel-absorbing member being placed adjacently to a part of the methanol delivery film (209, 460, 860) (Applicant's limited fuel-permeating part) that absorbs the liquid fuel.

Wilson teaches a superabsorbent material (36) (Applicant's fuel-absorbing member) being placed within a fuel reservoir cavity (34) (figure 2B; column 6, lines 12-40). Wilson teaches that the superabsorbent material (36) (Applicant's fuel-absorbing member) supplies phase changed methanol from neat liquid to vapor form, which limits methanol cross-over (column 4, lines 57-62). It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Wilson's superabsorbent material (36) (Applicant's fuel-absorbing member) to Ren's fuel reservoir (450, 850), because Wilson teaches that the superabsorbent material (36) (Applicant's fuel-absorbing member) supplies phase changed methanol, from neat liquid to vapor form, which limits methanol cross-over (column 4, lines 57-62), and desired by Ren et al. (figures 2-4 and 8; paragraph 68).

Response to Arguments

5. Applicant's arguments filed October 6, 2009 have been fully considered but they are not persuasive.

Applicant's principal arguments are:

(a) The properties in claim 1, which are the volume expansion coefficient of 4.5 or less and the initiating of water migration from the evaporation inhibiting layer to the cathode at a temperature of 80ºC or lower, are not inherent in the woven fabric containing a fibrous cellulose of Ren et al. modified by Kinkelaar et al., because the Examiner has not provided a basis in fact or technical reasoning to support this conclusion, and also the genus of woven or unwoven fabric containing a fibrous cellulose does not mean that the specific species of material has a suitable volume expansion coefficient and specific water migration properties.

In response to Applicant's arguments, please consider the following comments.

(a) Ren et al. modified by Kinkelaar et al. teaches an evaporation inhibiting layer made of a fabric of matted (Applicant's non-woven) or woven fibers of cellulose (Applicant's fibrous cellulose) (Kinkelaar et al. paragraph 16). The Office Action issued on July 20, 2009 points out the basis in fact or technical reasoning to support the conclusion of inherency in paragraph 4. The basis in fact and technical reasoning to support inherency is that both Ren et al. modified by Kinkelaar et al. and the Applicant utilize the same material of woven or nonwoven fibers of cellulose (instant application page 12, lines 20-26; examples 1 and 2). The Applicant utilizes a fibrous cellulose

sheet in Examples 1 and 2 as the evaporation inhibiting layer, which is a genus for the species taught by Ren et al. modified by Kinkelaar et al. of a fabric of matted (Applicant's non-woven) or woven fibers of cellulose (Applicant's fibrous cellulose) (Kinkelaar et al. paragraph 16). The fabric of matted (Applicant's non-woven) or woven fibers of cellulose (Applicant's fibrous cellulose) taught by Ren et al. modified by Kinkelaar et al. (Kinkelaar et al. paragraph 16) is not the genus of a species taught by the Applicant (examples 1 and 2), but is a species of the genus taught by the Applicant (examples 1 and 2).

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Correspondence/Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine Turner whose telephone number is (571)270-5314. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on (571)272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. T./
Examiner, Art Unit 1795

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